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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,049	06/21/2001	Kie Y. Ahn	MI22-1738	8608

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EXAMINER

MALDONADO, JULIO J

ART UNIT PAPER NUMBER

2823

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/887,049

Applicant(s)

AHN, KIE Y.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 35-37, 40-63 and 65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-37, 40-63 and 65 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 19 September 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. The non-final rejection as set forth in paper No.11 is withdrawn in response to applicants' amendments.
2. Applicant's cancellation to claims 1-34, 38, 39 and 64 is acknowledged.
3. Claim 65 is newly added.
4. Claims 35-37, 40-63 and 65 are pending in the application.

### ***Allowable Subject Matter***

5. The indicated allowability of claims 35-37, 40-63 and 65 is withdrawn in view of the newly discovered reference(s) to Thomas et al. ("VLSI Multilevel Micro-coaxial Interconnects For High Speed Devices") in view of Inoue et al. (U.S. 5,148,260) and Val (U.S. 5,323,533). Rejections based on the newly cited reference(s) follow.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 35-37, 50, 56 and 62 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 35-37, 50, 56 and 62 teach, "...wherein the outer conductive sheath is not formed on the outer surface...". However, there is not description in the specification that the "outer conductive sheath" is "not formed on the outer surface" as claimed.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 35-37, 40-63 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas et al. ("VLSI Multilevel Micro-coaxial Interconnects For High Speed Devices") in view of Inoue et al. (U.S. 5,148,260) and Val (U.S. 5,323,533).

In reference to claims 35-37, 40, 42, 43, 45-48, 50, 51, 53, 54, 56, 57, 59, 60, 62, 63 and 65 Thomas et al. (Figs.1a-b) teach a coaxial interconnect structure comprising a base substrate having an outer surface; an inner conductive core spaced from and suspended over the outer surface, wherein the inner conductive core is formed over a contact area; a dielectric layer surrounding a substantial portion of the inner conductive core; and an outer conductive sheath surrounding a substantial portion of the dielectric layer; wherein the outer conductive sheath comprises copper, is not formed on the outer surface and wherein leaves some void space between the outer conductive sheath and the outer surface (3.5.1 – 3.5.3).

Thomas et al. fail to teach a contact area comprising a pair of upstanding, spaced apart terminal member disposed over a semiconductive substrate outer surface, and wherein the inner conductive core comprises a copper-comprising layer having a thickness of between about 100 to 200 nanometers; a conductive layer of material disposed and operably connected with the copper-comprising layer of material the

conductive layer comprising conductive material selected from the group consisting of copper, gold, nickel, cobalt and iron. However, Inoue et al. (Figs.1A-1F) in a related art to the formation of an air bridge structure teach an integrated circuitry comprising a semiconductor substrate (11, 13) having an outer surface; a pair of upstanding, spaced apart conductive terminal members (14) disposed over the substrate outer surface; a copper-comprising layer (17) having a thickness of between about 100 to 200 nanometers; a conductive layer (20) of material disposed and operably connected with the copper-comprising layer of material (17), the conductive layer comprising conductive material selected from the group consisting of copper, gold, nickel, cobalt and iron, wherein the copper comprising layer (17) and the conductive layer (20) comprise an inner conductive core spaced from and suspended over the outer surface (column 3, line 9 – column 5, line 25). Therefore, it would have been obvious to one of ordinary to combine the teachings of Thomas et al. and Inoue et al. to enable the conductive terminal members over the semiconductive substrate and the inner conductive core of Inoue et al. to be provided.

The combined teachings of Thomas et al. and Inoue et al. fail to teach a parylene layer surrounding a substantial portion of the inner conductive core. However, Val (Figs.2a-2c) teaches a coaxial line structure including a parylene layer (21) surrounding a substantial portion of an inner conductive core (F); and an outer conductive sheath (24) surrounding a substantial portion of the polymer dielectric layer, wherein the outer conductive sheath comprises aluminum and said sheath is not formed on the outer surface (column 2, line 19 – column 3, line 23). Therefore, it would have been obvious

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to one of ordinary skill in the art at the time of the invention was made include the polymer dielectric layer and the outer conductive sheath as taught by Val in the coaxial interconnect structure of Thomas et al. and Inoue et al., since this would result in a dielectric layer with resistance to temperature and frequency changes (column 2, lines 44 – 57).

In reference to claims 41, 46, 52 and 58, the combined teachings of Thomas et al., Inoue et al. and Val teach that the polymer dielectric layer comprises parylene but fail to teach the relative dielectric constant of the polymer dielectric layer is about 2.6 (Val, column 2, line 19 – column 3, line 23). It would have been obvious to one of ordinary skill in the art at the time of the invention was made that the polymer dielectric layer of the combined teachings would have a relative dielectric constant of 2.6 as taught by the claimed invention, since the material used by the combined teachings are those of the claimed invention.

In reference to claims 44, 49, 55 and 61, the combined teachings of Thomas et al., Inoue et al. and Val teach a coaxial structure including a conductive layer consisting of a material comprising nickel and chrome (Val, column 3, lines 6 – 23). It would have been obvious to one of ordinary skill in the art to use nickel and chrome as conductive materials as taught by Val in the air bridge structure of the combined teachings, since these materials are well known in the art and its selection involves common knowledge in the art. Furthermore, the specification contains no disclosure of either the critical nature of the claimed materials or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen conductive materials or upon

another material recited in a claim, the applicant must show that the particular conductive materials are critical.

***Response to Arguments***

10. Applicant's arguments with respect to claims 35-37, 40-63 and 65 have been considered but are moot in view of the new ground(s) of rejection.

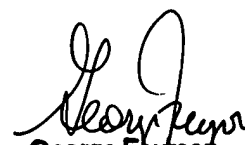
***Conclusion***

11. Papers related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is **(703) 305-3432**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Julio J. Maldonado** at **(703) 306-0098** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via [julio.maldonado@uspto.gov](mailto:julio.maldonado@uspto.gov). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 308-0956**.

JMR  
4/22/03

  
**George Fourson**  
Primary Examiner